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Records of the Northern Vietnamese Odonata Taken
by the Expedition Members from the
National Science Museum, Tokyo

3. Aeschnidae, Corduliidae and Libellulidae^{1,2)}

By

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Abstract Twenty-two species of northern Vietnamese dragonflies containing three aeschnids, four corduliids and fifteen libellulids are recorded. Two species *Planaeschna tamdaoensis* and *Pl. tomokunii* are described and illustrated as being new to science. *Macromia pinratani vietnamica* is described as a new subspecies. Particular attention is paid in redescribing *Somatochlora dido* NEEDHAM, 1930 and a female of *Lyriothemis bivittata* (RAMBUR, 1842).

In the third part of this series of reports, twenty-two species of northern Vietnamese Odonata belonging to three anisopterid families will be recorded. Two new species of the Aeschnidae and a new subspecies of the Corduliidae will be described and illustrated. A poorly known corduliid will be redescribed, and a discussion will be made on the female of a libellulid.

Family Aeschnidae

18. *Anax guttatus* (BURMEISTER)

Specimens examined. 1♂, Truong Yen, 950 m alt., Moc Chau, Son La Prov., 1–V–1995, M. OWADA leg.

A common South Asiatic species.

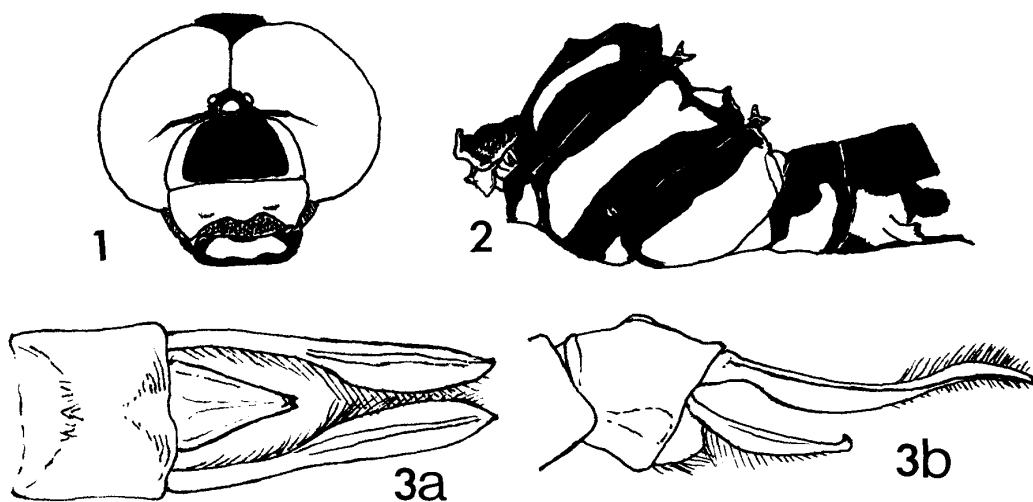
19. *Planaeschna tamdaoensis* sp. nov.

(Figs. 1–3)

Specimen examined. 1♂ (Holotype), Tam Dao, 950 m alt., Vinh Phu Prov., 24–IX–1994, Akiko SAITO leg.

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2) Parts 1 and 2 of this series were published in Bull. natn. Sci. Mus., Tokyo, (A), 21: 219–229 (1995) and 22: 21–32 (1996).



Figs. 1-3. *Planaeschna tamdaoensis* sp. nov., ♂; 1, head, frontal; 2, thorax and basal segments of abdomen; 3a, caudal appendages, dorsal; 3b, same, lateral.

♂ (Holotype): Hindwing length 44 mm, abdomen (incl. appendages) 49 mm. A mature specimen, coloured black and yellow.

Head shining black and yellow (Fig. 1); occiput, vertical tubercle, whole the dorsal part, and the median frontal side of frons shining black, labrum deep yellow with black margin. Anteclypeus deep brown, base of mandible also deep brown.

Pterothorax black, bearing three pale yellow bands (Fig. 2). Legs deep brownish, paler proximally; base of foreleg almost colourless. Wings hyaline in this specimen; pterostigma short, 2.6 mm (f.w.), 2.8 mm (h.w.), deep brownish; antenodal cross-vein 23 (f.w) and 17 (h.w.); triangle with 4 cells (f.w.) and 5 cells (h.w.). Anal triangle 3-celled, the anal angle of hindwing rounded. Anal loop 9-celled in both wings.

Abdomen predominantly black, only two basal segments yellowish on latero-ventral side (Fig. 2). Segments 3-8 each with one yellowish band, segments 2-4 with a small terminal spot on dorsum, respectively.

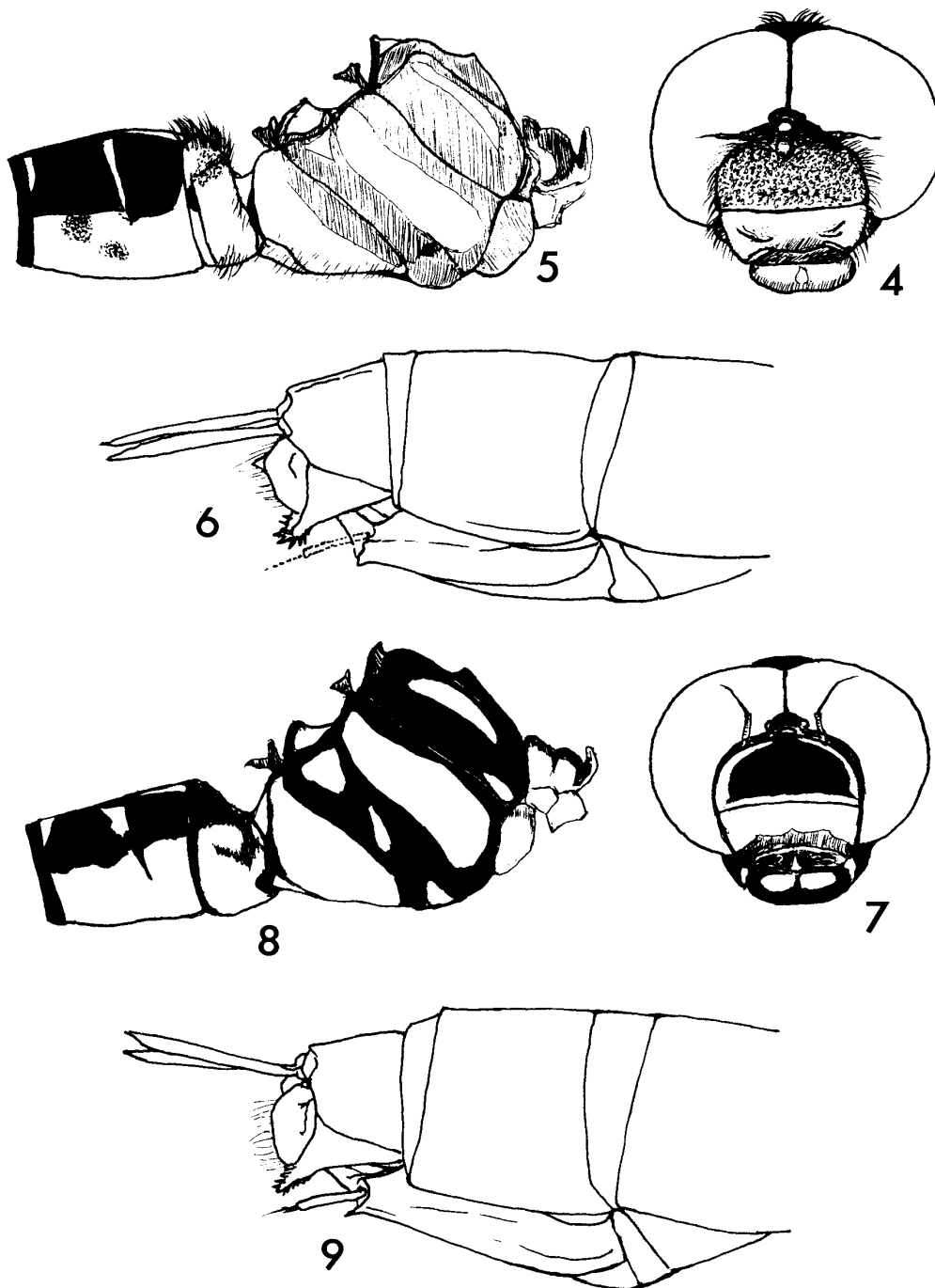
Caudal appendages (Fig. 3 a, b) black, long and slender at proximal 1/2, but widened in their distal halves.

Remarks. This male specimen is very much alike Japanese *Pl. milnei*, but the yellowish abdominal bands are much less developed, and the superior caudal appendages are broadened at their distal halves.

20. *Planaeschna tomokunii* sp. nov.

(Figs. 4-6)

Specimen examined. 1 ♀ (Holotype), Tam Dao, 930 m alt., Vinh Phu



Figs. 4-9. — 4-6. *Planaeschna tomokunii* sp. nov., ♂; 4, head, frontal; 5, pterothorax and two abdominal segments, lateral; 6, abdominal end, lateral. — 7-9. *Pl. taiwana taiwana* ASAHINA (for comparison to Figs. 4-6); 7, head, frontal; 8, pterothorax and two abdominal segments, lateral; 9, abdominal end, lateral.

Prov., 22-IX-1995, M. TOMOKUNI leg.

♀ (ad., Holotype): A fully matured specimen. Length of abdomen 53 mm, hindwing 51 mm. Ground colour of pterothorax olive-green, being provided with broad pale brownish stripes; abdominal segments deep brownish dorsally, only ventral margin yellowish, the yellow tint being broader on the basal three segments.

Head pale brownish entirely; in frontal view (Fig. 4), antefrons deep brownish with roughly punctured surface and marginal hairs. Postclypeus and labrum almost entirely yellow, anteclypeus being more brownish. Occiput shining black with dark hairs.

Ground colour of pterothorax pale brown bearing three pale greenish bands, of which the hindmost one on metathoracic epimeron is much yellowish tinted.

Wings entirely brownish smoked in this mature specimen.

Abdomen mostly deep brownish or practically black tinted. Lower parts of the sides of 1-3 segments (Fig. 5) almost entirely yellowish. Middorsal longitudinal stripes on 2 and 3 segments and midsegmental paired dorsal stripes pale coloured. Sternite of the last abdominal segment produced backwards, and armed with minute spines. Cerci slender, almost twice as long as the segmental length (Fig. 6).

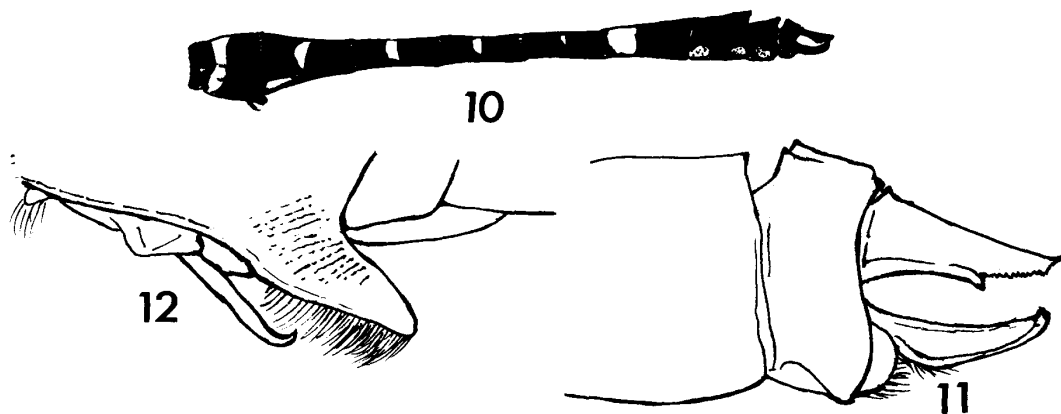
Remarks. Since the present species appears very closely allied to *Pl. taiwana* ASAHINA (1951), one of the Taiwanese *Planaeschna* representatives, I give here some sketches of the latter species taken in Taiwan (Figs. 7-9).

Family Corduliidae

21. *Macromia moorei* SELYS (subsp.?)

(Figs. 10-12)

Specimens examined. 2♂, Ban Khoang, 1,400 m alt., Sa Pa, Lao Cai Prov.,



Figs. 10-12. *Macromia moorei* SELYS (subsp.?); 10, abdominal colour pattern; 11, caudal appendages, lateral; 12, accessory genitalia, lateral.

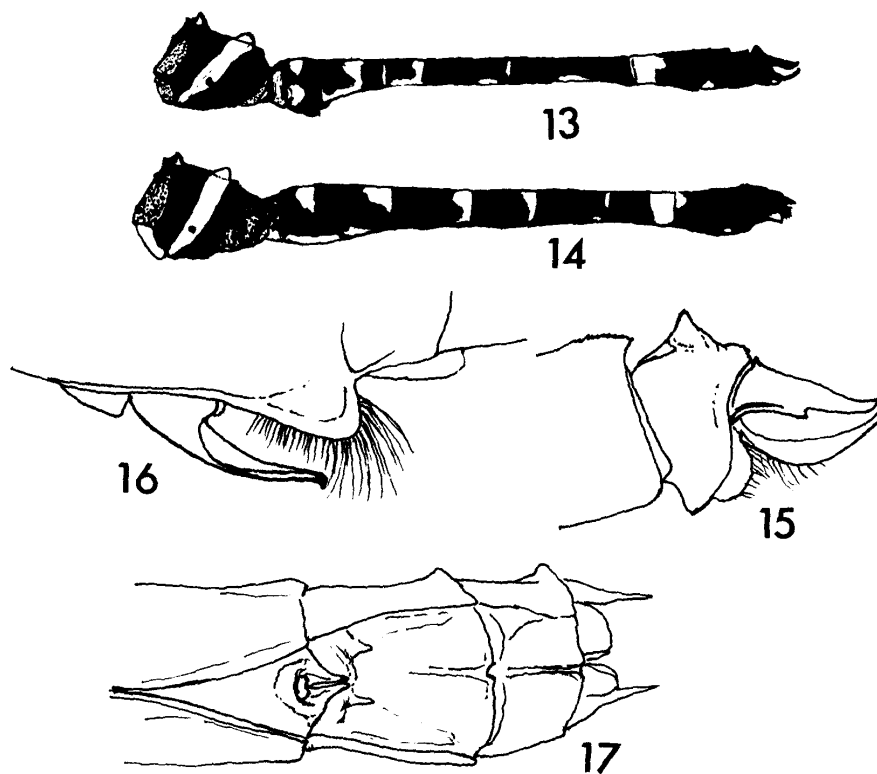
12-V-1995, M. OWADA leg.

The present two male specimens appear to belong to the nominotypical form of *M. moorei* known from the Himalayas and Assam, or to subsp. *malayana* LAIDLAW known from Malaysia, Burma and Thailand (cf. LIEFTINCK, 1929; ASAHINA, 1987). However, since our northern Vietnamese specimens do not exactly coincide with any of them, I prefer to leave them without determination of further status. The abdominal pattern (Fig. 10), caudal appendages (Fig. 11) and the accessory genitalia (Fig. 12) of these northern Vietnamese specimens are illustrated herewith.

22. *Macromia pinratani vietnamica* subsp. nov.

(Figs. 13-17)

Specimens examined. 1♂ (Holotype), Mt. Tan Vien, 980 m alt., Ba Vi, Ha Tay Prov., 28-IV-1995, M. OWADA leg.; 1♂, Tam Dao, 1,230 m alt., Vinh Phu Prov., 19-V-1995, M. SATÔ leg.; 1♂, 1♀, Tam Dao, 1,150 m alt., Vinh Phu Prov., 20-V-1995, S. UENO leg.



Figs. 13-17. *Macromia pinratani vietnamica* subsp. nov., ♂ ♀; 13, ♂ body pattern; 14, ♀ body pattern, lateral; 15, ♂ caudal appendages, lateral; 16, ♂ accessory genitalia, lateral; 17, ♀ valvula vulvae, ventral.

Macromia pinratani ASAHINA (1983) has been recorded exclusively from Peninsular Thailand. Our present northern Vietnamese males differ from nominotypical Thai specimens as follows:

- 1) Body larger in size: hindwing length ♂ 45–50 mm, ♀ 51 mm.
- 2) Metallic greenish ground colour of the body deeper. The yellowish or brownish stripes of the pterothorax and abdominal segments are much more developed than those of the nominotypical race described from Thailand. In particular, the yellow bands of the 2–7 abdominal segments are strongly developed in both sexes (Figs. 13–14).
- 3) The upstanding dorsal process of the last abdominal segment in the male is very strong (Fig. 15).
- 4) The genital hamulus of the male is well developed (Fig. 16).
- 5) The female valvula vulvae and the sternite of the 9th abdominal segment are as illustrated (Fig. 17).

23. *Somatochlora dido* NEEDHAM

(Figs. 18–20)

Somatochlora dido NEEDHAM, 1930, Zool. sin., Peiping, (A), 11 (1), p. 114, pl. 11, fig. 4 (♂ app.), "Two males, collected by Dr. D. C. Graham in Szechuen, belong to the U.S. National Museum; without further data."

Specimens examined. 1♂, Deo Tram Ton, 1,950 m alt., Lao Cai Prov., 2-X-1995, S. NOMURA leg.; 1♂, Deo Tram Ton, 2,000 m alt., Lao Cai Prov., 4-X-1995, H. KURAHASHI leg.

This is a second record of this rather enigmatic species after its original description in 1930, just 65 years ago! Lao Cai is a province situated close to the Yunnanese border!

♂ (redescription): [NOMURA's ♂] Abd. (incl. app.) 34 mm, h.w. 33 mm; [KURAHASHI's ♂] Abd. (incl. app.) 35 mm, h.w. 33 mm.

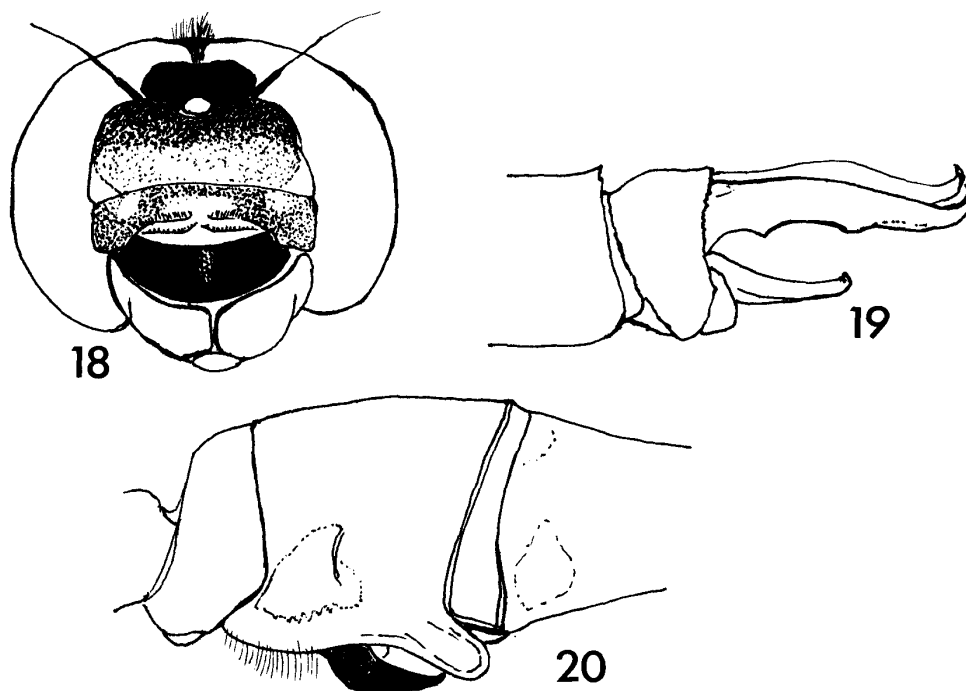
Rather small-sized, dark metallic-blue coloured species.

Labium entirely dark yellow, labrum deep brown, ante- and postclypei pale brownish though its dorsal part is shining green, occiput dark greenish covered with long hairs; occipital triangle black with long hairs.

Prothorax brownish, coxa of proleg yellowish brown, meso- and metalegs all shining black, their coxae being brownish. Pterothoracic pleurites shining metallic green with distinct broad yellowish bands at the sides on meso- and metepimera, the former not including the thoracic stigma.

Legs black, the distal end of metafemur reaching accessory genitalia of the second abdominal segment.

Wings hyaline, antenodal cross-veins 9 (f.w.) and 6 (h.w.), triangles of both wings crossed once, respectively; anal triangle also crossed once; pterostigma deep



Figs. 18–20. *Somatochlora dido* NEEDHAM, ♂; 18, head, frontal; 19, caudal appendages, lateral; 20, genital hamulus, lateral.

black.

Abdomen deep metallic green, with yellow markings as follows: segment 1 none, segment 2 with a triangular yellow spot and an yellow edge along the posterior margin; two proximal spots laterally on segment 3, otherwise entirely deep metallic black to caudal appendages.

Caudal appendages (Fig. 19) black, the superior one bearing two small tubercles on the lateral side, of which the proximal one is at 1/5 and the distal one at 3/5 from the base. The apex of the appendage recurved and pointed. The inferior appendage narrow, ca. 3/5 or 3/4 the length of the superior.

Genital hamulus of the second abdominal segment very simple, apically pointed, sickle-shaped (Fig. 20).

Female unknown.

24. *Idionyx* sp.

Specimen examined. 1 ♀ (teneral), Ban A Chia, 890 m alt., Muong Lay, Lai Chau Prov., 8-V-1995, M. OWADA leg.

A standard-sized, teneral female specimen. Hindwing length 33 mm, abdomen ca. 30 mm.

Head deep reddish brown with the upper part of antefrons and the frontal tubercle shining green, the latter unfortunately badly depressed in the present

specimen. Occipital triangle black.

Pterothorax shining bluish green with ambiguous pale yellow patch on the lower half of mesepisternum, distinct lateral yellowish stripes present on metepisternum and metepimeron, respectively, including metapostepimeron.

Abdomen extensively black coloured, segments 1–3 with narrow yellowish ventral margin; narrow posterior segmental field of 2–4 segments also yellow.

Very short valvula vulvae can be recognized in the present flatly depressed specimen. Cerci short, triangular.

Wings hyaline, bases of all wings pale brownish tinted to the triangle.

Remarks. Since rather numerous congeneric species are found in Southeast Asia, and since the single present female specimen is not well preserved, further description is postponed to a future occasion when male insects become available.

Family Libellulidae

25. *Lyriothemis bivittata* (RAMBUR)

(Figs. 21–23)

Libellula bivittata RAMBUR, 1842, Hist. nat. Ins., Névroptères, p. 75, (♀ Musée de Paris), “Je ne connais que la femelle de la collection du Muséum.”

Orthemis bivittata: BRAUER, 1868, Verh. zool.-bot. Ges. Wien, 18, p. 729.

Calothemis bivittata: SELYS, 1878, Mitt. Mus. Dresden, 3, p. 306, “♂ Brauers Type, Indes orientales, probablement Malacca par Diard.” — SELYS, 1883, Annls. Soc. ent. Belg., 27, p. 143, “ptérostigma très longs: *C. bivittata*. Feuille du 8^e segment étroite.” — KIRBY, 1890, Catalogue, p. 42, “Malacca.” — LAIDLAW, 1902, Proc. zool. Soc. London, 1902 (1), p. 69, “Skeat Expedition in the Malay Peninsula.”

Calothemis magnificata MARTIN, 1904, Mission Pavie, p. 6 (sep.), ♀ Tonkin.

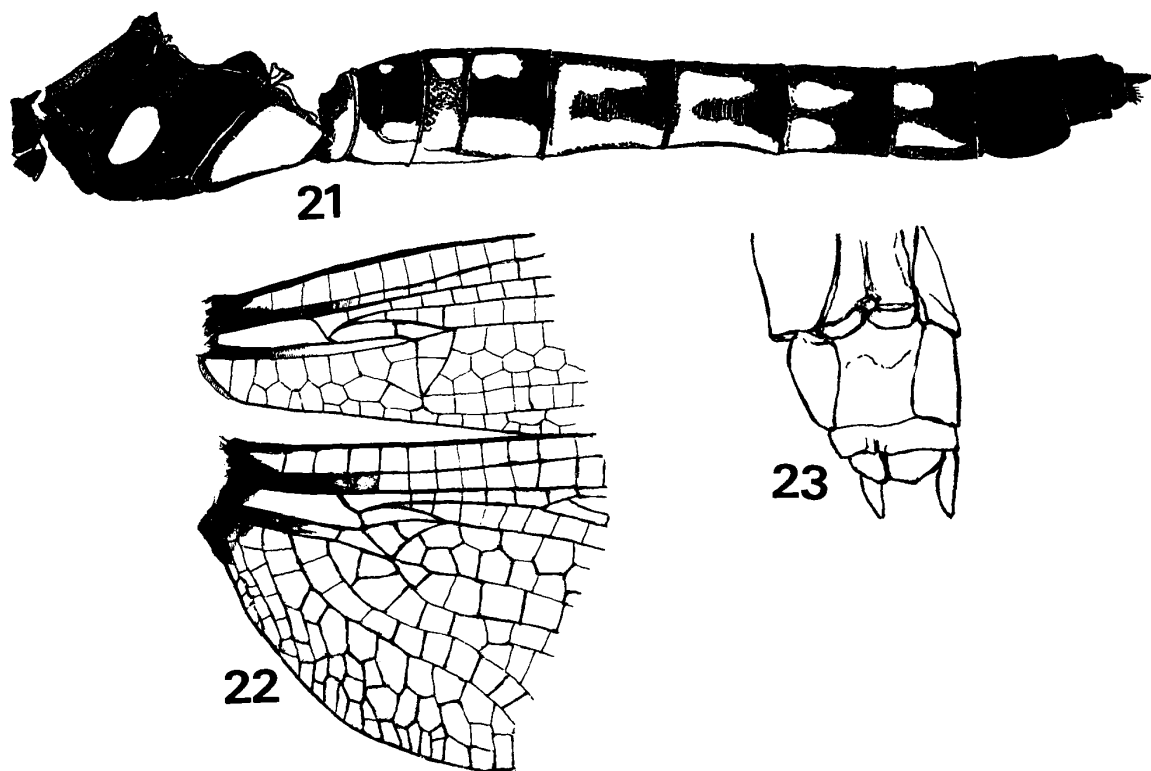
Lyriothemis bivittata: RIS, 1909, Coll. Zool. Selys, Libellulinen, Fasc. 9, pp. 112–115, fig. 81 (♂ wings), fig. 82 (♂ gen. hamulus), Coll. Selys, 1 ♀ Sibb (agar); Coll. R. Martin: 4♂ 2♀ Tonkin; 1♂ Darjeeling (Coll. MacLachlan), Brit. Mus., “2 ♀ Tonkin.” — FRASER, 1936, Fn. Brit. India, Odonata, 3, pp. 269–270, “Bengal, Burma, Malaya, Indochina.” — ASAHINA, 1988, Tombo, Tokyo, 31, pp. 13–15, figs. 21–26, ♂ ♀ (1♂ reared), Chantaburi; Khao Soi Dao Nua Nat. Reserve).

Specimen examined. 1 ♀, Cuc Phuong, 370 m alt., Gia Vien, Ninh Binh Prov., 25–V–1995, Akiko SAITO leg.

1 ♀ (ad.): Hindwing 40 mm, abd. 39 mm.

Head deep blackish brown, labrum black, labium almost entirely black, clypeus dark brownish including lower part of frons, top of frons shining black, also frontal tubercle but on its lateral side remains a pale yellowish area. Labium black, its base paler.

Prothorax black, its anterior and posterior margins pale coloured. Pterothorax almost entirely black except for two yellow areas: one small oval spot present at the lower part of mesepimeron, and the other larger one occupying almost entire mesepimeron, its ventral margin and metapostepimeron being black.



Figs. 21–23. *Lyriothemis bivittata* RAMBUR, ♀; 21, thoracic and abdominal body pattern, lateral; 22, basal part of both wings, showing dark stripes in subcostal and cubitoanal spaces; 23, abdominal end, ventral.

Wings hyaline, more or less smoked in this mature specimen, but the two wing-base spaces, i.e., subcostal space (sc) and cubitoanal space (cuq) of both wings, are deeply darkened for two or three cell-length (Fig. 22).

Ground colour of abdomen yellow, with all the outline ridges of 3–7 segments black; paired longitudinal black stripes present on 3–7 segments, being connected with the posterior black area of each segment (Fig. 21), 8–10 segments entirely black, the 8th segment only slightly broadened laterad. Cerci black.

Valvula vulvae (Fig. 23) very short and black, only slightly bilobed at the middle.

Remarks. In the past descriptions of female *bivittata*, abdominal coloration was stated almost entirely reddish. Indeed, 4 females of *L. bivittata* in my collection (all taken at Khao Soi Dao Nature Reserve, Thailand) have almost uniformly reddish abdomen. However, RIS (1909, p. 114) noted one yellowish case from Tonkin bearing dark patterns.

26. *Orthetrum sabina* (DRURY)

Specimens examined. 1♂, Tam Dao, 930 m alt., Vinh Phu Prov., 22–IX–

1994, A. SAITO leg.; 1♂, same loc., 24-IX-1994, M. SATÔ leg.; 1♀, same loc., 22-IX-1995, H. ONO leg.; 1♂, Mt. Tan Vien, 390 m alt., Ba Vi, Ha Tay Prov., 27-IV-1995, Y. NISHIKAWA leg.; 1♀, Son La, 620 m alt., Son La Prov., 2-V-1995, Y. NISHIKAWA leg.

27. *Orthetrum luzonicum* (BRAUER)

Specimen examined. 1♂ (teneral), Ban Him Bon, 440 m alt., Xa Pa Ha, Muong Lay, Lai Chau Prov., 7-V-1995, A. SAITO leg.

28. *Orthetrum glaucum* (BRAUER)

Specimens examined. 1♂, Mo Phuc, 580 m alt., Cao Bang Prov., 30-IX-1994, A. SAITO leg.; 1♂, Ban Him Bon, 440 m alt., Xa Pa Ha, Muong Lay, Lai Chau Prov., 8-V-1995, A. SAITO leg.; 1♂, Ban A Chia, 890 m alt., Xa Hung Nga, Muong Lay, Lai Chau Prov., 8-V-1995, Y. NISHIKAWA leg.

29. *Orthetrum pruinsum neglectum* RAMBUR

Specimens examined. 1♂, Ban Gun, 270 m alt., Xa Ngu Lao, Cao Bang Prov., 30-IX-1994, A. SAITO leg.; 1♂, Pac Po, 340 m alt., Cao Bang Prov., 2-X-1994, A. SAITO leg.; 1♂, Tam Dao, 1,100 m alt., Vinh Phu Prov., 25-IX-1995, H. ONO leg.; 1♂, Deo Thung Khe, 700 m alt., Mai Chau, Hoa Binh Prov., 29-IV-1995, Y. NISHIKAWA leg.; 1♂, Ban A Chia, 890 m alt., Xa Hung Nga, Muong Lay, Lai Chau Prov., 8-V-1995, Y. NISHIKAWA leg.

30. *Orthetrum triangulare triangulare* (SELYS)

Specimens examined. 1♂, Tam Dao, 930 m alt., Vinh Phu Prov., 25-IX-1994, A. SAITO leg.; 1♂, Tam Dao, 950 m alt., Vinh Phu Prov., 25-IX-1995, H. ONO leg.

The reduced black marking at the base of hindwing is very impressive in these specimens of the nominotypical subspecies of *O. triangulare*.

31. *Diplacodes trivialis* (RAMBUR)

Specimens examined. 1♂, Pac Po, 340 m alt., Cao Bang Prov., 2-X-1994, A. SAITO leg.; 1♂, Tam Dao, 950 m alt., Vinh Phu Prov., 25-IX-1995, H. ONO leg.; 1♂, Sa Pa, 800-1,200 m alt., Lao Cai Prov., 6-X-1995, H. KURAHASHI leg.

A common lowland species.

32. *Brachythemis contaminata* (FABRICIUS)

Specimen examined. 1♂, Hanoi [hotel], 21-IX-1994, A. SAITO leg.
A common lowland species.

33. *Palpopleura sexmaculata* (FABRICIUS)

Specimens examined. 2♂, Mt. Tan Vien, 370 m alt., Ba Vi, Ha Tay Prov., 27-IV-1995, A. SHINOHARA leg.; 1♀, Ban Cong, 770 m alt., Mai Son, Son La Prov., 3-V-1995, S. UÉNO leg.; 2♂, Ban A Chia, 890 m alt., Xa Hung Nga, Muong Lay, Lai Chau Prov., 8-V-1995, A. SAITO leg.; 1♂, 1♀, Ban A Chia, 890 m alt., Xa Hung Nga, Muong Lay, Lai Chau Prov., 8-V-1995, A. SHINOHARA leg.; 1♀, Lai Chau, 290 m alt., Lai Chau Prov., 8-V-1995, Y. NISHIKAWA leg.; 1♀, Sa Pa, 800-1,200 m alt., Lao Cai Prov., 6-X-1995, H. KURAHASHI leg.

34. *Crocothemis servilia* (DRURY)

Specimens examined. 1♂, Mo Phuc, 580 m alt., Cao Bang Prov., 30-IX-1994, A. SAITO leg.; 1♂, Ban A Chia, 890 m alt., Xa Hung Nga, Muong Lay, Lai Chau Prov., 8-V-1995, A. SAITO leg.; 1♂, 1♀, Tam Dao, 930 m alt., Vinh Phu Prov., 25-IX-1995, H. ONO leg.

35. *Neurothemis fulvia* (DRURY)

Specimens examined. 1♀, Ban Thai, 380 m alt., Xa Pa Tan, Sin Ho, Lai Chau Prov., 9-V-1995, Y. NISHIKAWA leg.; 1♀, Sa Pa, 1,500 m alt., Lao Cai Prov., 2-X-1995, H. KURAHASHI leg.

36. *Trithemis pallidinervis* (KIRBY)

Specimens examined. 3♂, Mo Phuc, 580 m alt., Cao Bang Prov., 30-IX-1994, A. SAITO leg.; 2♂, Pac Po, 340 m alt., Cao Bang Prov., 2-X-1994, A. SAITO leg.; 1♀, Xuan Nha, 850 m alt., Moc Chau, Son La Prov., 30-IV-1995, Y. NISHIKAWA leg.; 1♂, Ban Him Bon, 440 m alt., Xa Pa Ha, Muong Lay, Lai Chau Prov., 7-V-1995, A. SAITO leg.

37. *Rhyothemis variegata variegata* (LINNÉ)

Specimens examined. 1♂, Hanoi, 21-X-1994, A. SAITO leg.; 1♀, Hanoi, 25-V-1995, A. SAITO leg.; 1♀, Ao Vua, 120 m alt., Ba Vi, Ha Tay Prov., 27-IV-1995, M. OWADA leg.; 1♂, Cuc Phuong, 370 m alt., Gia Vien, Ninh Binh Prov.,

24-V-1995, S. UENO leg.; 1♂, Cuc Phuong, 160 m alt., Gia Vien, Ninh Binh Prov., 27-V-1995, S. UENO leg.

38. *Zygonyx iris insignis* (KIRBY)

Specimens examined. 1♀, Ao Vua, 120 m alt., Ba Vi, Ha Tay Prov., 16-X-1995, M. TOMOKUNI leg.; 3♂, Ban A Chia, 890 m alt., Xa Hung Nha, Muong Lay, Lai Chau Prov., 8-V-1995, M. OWADA leg.; 1♂, Ban A Chia, 890 m alt., Xa Hung Nha, Muong Lay, Lai Chau Prov., 8-V-1995, M. SATO leg.

39. *Pantala flavescens* (FABRICIUS)

Specimens examined. 1♀, Tam Dao, 950 m alt., Vinh Phu Prov., 25-IX-1994, A. SAITO leg.; 1♀, Tam Dao, 950 m alt., Vinh Phu Prov., 22-IX-1995, H. ONO leg.; 1♀, Yen Bai, 200 m alt., Yen Bai City, 9-X-1995, H. KURAHASHI leg.

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